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An undergraduate Otolaryngology curriculum comparison in the United Kingdom using a Curriculum Evaluation Framework

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For Peer Review

An undergraduate Otolaryngology curriculum comparison in the United Kingdom using a Curriculum Evaluation Framework

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Abstract:

Objective

1. To compare undergraduate Otolaryngology curricula in the United Kingdom.
2. To develop a tool which would allow undergraduate specialty curricula to be compared.

Design

Development of a Curriculum Evaluation Framework and survey.

Setting

UK medical schools.

Participants

Otolaryngology curricula were requested from all 32 UK medical schools who award a primary medical qualification. 19 curricula were received and examined.

Main outcome measures

A thematic and content analysis of curriculum documents was undertaken. Outcome measures include an examination of curriculum content and methods, type of assessment and alignment of curricula with the General Medical Council's Tomorrow's Doctors document.

Results

Learning objectives were listed by 18 of the 19 medical schools who responded. The most commonly included theme was clinical conditions (100%). Psychosocial aspects of otolaryngology was the least covered theme (37%). Examination skills were covered by the majority (74%).
Outpatient clinics and theatre attendance were the most commonly utilised teaching methods (47%). Student checklists were the most common form of assessment (32%). Only 4 medical schools linked their curricula to the GMC's Tomorrow's Doctors document.

Conclusions

The development of a Curriculum Evaluation Framework allowed for a systematic comparison of curricula. This study, evaluating Otolaryngology curricula, has highlighted the variability of curricula from both a content and methods perspective in the UK.

The study provides those involved with curriculum planning an overview of the main themes currently taught in the UK and offers examples of individual topics. It also offers an insight into the way in which Otolaryngology is taught in the UK.

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Introduction

A number of recent studies have highlighted the mismatch between the lack of undergraduate curriculum time for Otolaryngology and the large volume of ear, nose and throat conditions encountered in General Practice (1-3). These issues are not isolated to the UK as similar findings have been reported in the USA and in Canada (4, 5).

The Department of Health in the UK published a mandate in 2013 which called for 50% of medical graduates to enter General Practice (6). Studies report that 10-25% of adult and up to 50% of paediatric consultations in General Practice relate to Otolaryngology topics (2, 7-9). Otolaryngology therefore forms an important part of the education of General Practitioners.

The point in training where this educational need is addressed is a subject for debate. Some argue that time pressures and curriculum overload in the undergraduate domain push this responsibility towards postgraduate training (7). However the number of ENT posts in postgraduate training do not appear to meet these needs. A survey in 2007 showed that only 26% of General Practitioners had held a post in Otolaryngology and 75% would like more ENT teaching (10). In addition, for the 50% of graduates not entering General Practice, medical school may be a doctors' only exposure to Otolaryngology.

A number of papers have looked at Otolaryngology in the undergraduate curriculum. Based on Neil's Royal Society of Medicine Presidential Address, a 1979 paper highlighted a lack of curriculum time for ENT surgery (7). A review, published in 1990, concluded that there had been few changes to undergraduate Otolaryngology since this address (11). Subsequent surveys have shown that 22-30% of UK medical schools do not provide a compulsory placement in Otolaryngology (1, 2). This would suggest that a large proportion of medical students do not gain any experience in Otolaryngology.

A study in 2012 by Khan et al concluded that as curriculum time was limited, it "must be utilised efficiently" (1). It is therefore important to examine the Otolaryngology that is taught in UK medical schools and how it is taught. Examining individual medical schools' Otolaryngology curricula provides a method for doing this.

To our knowledge, no curriculum evaluation tool currently exists to allow for comparing undergraduate specialty curricula. This paper aims to compare undergraduate Otolaryngology curricula in the UK with the aid of a Curriculum Evaluation Framework (CEF) devised specifically for this task.

Given that the field of medicine is ever expanding it is important to be able to identify key learning needs to avoid curriculum overload. The specialty specific CEF was devised to examine key components of a curriculum. It allows for a structured comparison between curricula. This form of comparative needs assessment is useful for establishing areas of consensus and for highlighting differences which may indicate learning gaps in a curriculum.

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Methodology

Curriculum Evaluation Framework design

The CEF (table 1) was based on the GMC's definition of curriculum (12). The CEF utilises work on curriculum evaluation frameworks by Leibbrandt et al in 2005 (13). Their tool was designed to evaluate a school's overall curriculum. It has therefore been modified to suit the needs of specialty curricula. The CEF also incorporates ideas from Kern's Curriculum Development for Medical Education (14).

[Table 1]

The GMC's definition of curriculum states that it should include a statement of the "processes of a programme" and description of "expected methods" and "supervision"(12). Item 1 of the CEF aims to address these areas by examining course structure and organisational details. 'Links with other areas' refers to interaction between Otolaryngology, General Practice and other specialties or disciplines in which ENT conditions commonly present.

The GMC's definition of curriculum also states that it should include "the intended aims and objectives, content, experiences, outcomes and processes of a programme, including a description of the… expected methods of learning (and) teaching…" (12). Item 2 looks at content and methods of teaching.

A thematic analysis was conducted to determine the content element. Common themes, such as 'acute conditions' and 'examination skills', were identified. Further analysis then looked for topics related to these themes, for example otoscopy in examination skills. The analysis involved a thorough review of the documents followed by a keyword search. Key words were identified from the initial analysis and then expanded to include Medical Subject Headings (MeSH) as well as key words from MeSH tree structures.

Four theme areas were chosen for further analysis as they were felt to be representative of the breadth of the curriculum. This involved both thematic and content analysis. These were; Examination skills, Acute conditions, Rhinology (a subset of the clinical conditions theme) and Psychosocial aspects.

Item 3 focuses on assessment and feedback and is based on the GMC's curriculum definition stating that the curriculum should include "a description of the… expected methods of… feedback" (12). Each document was examined to ascertain the method of assessment employed. This includes self-assessment checklists.

Item 4 relates to alignment with the competencies as outlined by the GMC in Tomorrow's Doctors, and allows for a comparison to the overarching outcomes which medical schools must attain (15). Item 5 was included to ensure that any additional points of interest not captured by the other items were not missed.

Data collection

The Otolaryngology curriculum was requested by email from the 32 UK medical schools who award a primary medical qualification. Follow-up emails were sent where required. Analysis of each

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curriculum was undertaken by a single researcher (RS) using the CEF. Data were recorded in Microsoft Excel and results reported in a random manner to ensure that individual medical schools were not identifiable.

Ethical considerations

The University of Dundee ethics committee were consulted and no specific ethical issues were deemed to exist for this study.

Results

Otolaryngology curricula were received from 19 of the 32 UK medical schools (59%). It was possible to ascertain when a curriculum document had been written or updated for nine schools. Six were written within the last year. Two within the last five years and one was more than five years old. Documents ranged from a list of objectives through to in-depth study guides. In some medical schools where students visited Otolaryngology more than once, the curricula documents were split to deal specifically with the student's stage of training.

The curriculum documents provided information on the duration of Otolaryngology teaching for ten schools. Five schools had two or more weeks of Otolaryngology teaching. Three had between one and two weeks and two schools had less than one week of Otolaryngology teaching. It was not possible to work out the individual hours of teaching for each medical school from the documents. Five schools did however direct students to a separate document or a published timetable.

Course information was contained in 7 out of the 19 curriculum documents. Nine contained details of a contact person or course organiser. Nine also included information linking Otolaryngology to other areas in the medical school curriculum and four linked their curriculum to the GMC's Tomorrow's Doctors' outcomes (15). Aims, objectives or outcomes were listed in 18 of the 19 schools' curriculum documents.

All medical schools who replied included an ENT 'clinical condition' in their curriculum (figure 1). The majority also included acute conditions and examination skills. Procedural skills and psychosocial aspects were mentioned less often (by 12 and 7 schools respectively).

[Figure 1]

Examining the acute conditions theme in more detail revealed that there was a degree of variability regarding which conditions were covered in the curriculum document (table 2). Epistaxis was the most commonly mentioned. Orbital cellulitis was the least commonly covered and was only mentioned in one curriculum document.

[Table 2]

The rhinology subset was examined as a representative example of the clinical conditions theme. The variability in conditions covered can again be seen (table 3). Acute and chronic rhinosinusitis were the most commonly covered rhinology topics.

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[Table 3]

Examination skills were covered by 16 schools in total. Table 4 shows the variability in which skills were covered in each curriculum. Otoscopy was the most commonly covered skill with specialist test such as Dix-Hallpike, Romberg's and Unterberger's tests being mentioned in only a small number of otolaryngology curricula.

[Table 4]

Psychosocial aspects were mentioned in only seven Otolaryngology curricula (table S5). Communication with the hearing impaired was however covered by all seven of those schools. Behavioural and psychological factors affecting otolaryngology diseases and the social implications of vertigo were covered by three and two schools respectively.

[Table S5]

A variety of teaching methods were employed across the schools (table 6). Outpatient clinics and theatre attendance were the most common form. Four schools utilised allied health professions such as speech and language therapists. E-learning was mentioned in three curricula and two specifically allocated students with self-study time.

[Table S6]

Students were assessed using a variety of methods (table 7). The most commonly employed was a logbook. Self-assessment and reflection were each used by one medical school.

[Table 7]

Discussion

This study describes the development of a curriculum evaluation tool and then demonstrates how this can be applied to Otolaryngology. By linking the CEF to the GMC's definition of curriculum and incorporating work on evaluation tools used in previous studies, the CEF allowed for a structured comparison between curricula.

The results highlight the variability between Otolaryngology curricula in medical schools in the UK. This is consistent with previous studies which have shown that not all medical schools provide an Otolaryngology placement. Fung states that these differences in content and method are influenced by many factors which include local resources, allocated curriculum time and availability of teachers (16).

All UK Otolaryngology curricula covered at least one clinical condition. It is of interest however that only two thirds specifically mentioned history taking. Lloyd et al conducted a Delphi study in which doctors rated ENT history taking as extremely important (17). An acute condition or examination skill was mentioned in the majority of curricula. This is in-keeping with previous studies which have highlighted these as important (17-19).

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Examining the acute conditions theme, epistaxis and upper airway obstruction were covered by the majority, however tonsillitis was mentioned in only 58% of curricula. Given that tonsillitis is one of the most common ENT conditions encountered this suggests a potential mismatch between what is taught and clinical practice.

Examination skills were covered by most schools but there was a large degree of variability in the skills taught. Otoscopy was the most commonly mentioned (74%). This supports the literature with otoscopy being a commonly performed examination skill used in a variety of clinical settings with one previous study concluding that the number of ears examined by a student was important for competence (20).

Non-technical aspects of Otolaryngology, such as communication skills and multi-disciplinary working, were mentioned much less often than other themes. Other specialties have utilised these areas to increase the exposure of students to specialty related topics. One example of this is the national curriculum put forward by the Royal College of Obstetrics and Gynaecology in 2009 (21). In this they have incorporated topics such as ethics and communication skills teaching related to their speciality.

Otolaryngology is well placed to enable students to develop communication skills in difficult situations. Hearing impaired individuals and laryngectomy patients are good examples. It is also a specialty that works with a diverse range of allied health professionals and this allows opportunities for students to gain experience in Otolaryngology without further increasing the pressure on resources.

The most commonly used teaching methods were outpatient clinics and theatre attendance. A systematic review of Otolaryngology education showed clinic teaching to be highly rated as an educational format (4). Powell et al surveyed newly qualified doctors and found that clinics, lectures and theatre attendance were the most commonly used methods for delivering teaching (22). The same responders reported that theatre time was the least useful and formal teaching with patients was the most useful resource. This is however, in contrast to one study which showed students found Otolaryngology theatre attendance to be beneficial (23).

E-learning was noted in only a few of the curricula. Fung suggests that as the learning styles of students change, teaching methods may need to change to become more ‘interactive’ and ‘multimedia’ (16). Increasing the use of newer technology could be an effective way of increasing exposure without increasing pressure on departmental resources.

A previous study has shown that around one third of graduates had not been assessed in Otolaryngology in undergraduate training (22). In this current study nine schools mentioned assessment within the curriculum document. The most common of which was a checklist or logbook.

The overarching outcomes which students must meet at the point of graduation are the Outcomes for Graduates produced by the GMC (15). By linking curricula to this document, medical schools are able to ensure that they are covering the breadth expected of medical graduates. Although this relates to a medical school’s overall curriculum it can be useful for any specialty curriculum to link to this to aid with a medical school’s own mapping process. Four of the Otolaryngology curricula received specifically mention GMC Outcomes.

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Utilising their Delphi study, Lloyd et al have recently produced a curriculum outlining learning objectives relating to undergraduate Otolaryngology (17). Following this current curriculum evaluation, further work is underway to explore what medical students should learn about Otolaryngology.

Limitations

Ideally a curriculum review process should be robust, systematic and follow evidenced based principles, similar to those devised by Coleman et al (24). A limitation of using the curriculum document alone for evaluation is that many questions cannot be answered solely from the document; the intended curriculum does not necessarily equate to the curriculum in action(13). Given the description of a curriculum by the GMC however, the document should be comprehensive enough to establish basic principles.

The analysis was performed by a single researcher. Attempts to minimise any bias included having a robust study design and using systematic analysis including two separate methods of document analysis.

It is unclear whether schools who did not supply a curriculum chose not to or whether no Otolaryngology curriculum existed. From previous studies it is clear that there are a number of schools that do not have an Otolaryngology curriculum (1, 2).

Conclusion

The development of a Curriculum Evaluation Framework has allowed for a systematic comparison of curricula. This tool could prove useful for those involved in developing a specialty curriculum.

Otolaryngology forms an important part of the undergraduate medical curriculum. This study, evaluating Otolaryngology curricula, has highlighted the variability of teaching from both a content and methods perspective in the UK.

By highlighting this variety, we hope to provoke thought and debate regarding the otolaryngology which is taught in medical schools. It provides those involved with curriculum planning an overview of the main themes currently taught in the UK and offers examples of individual topics. It also gives an insight into the way in which Otolaryngology is taught in the UK.

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References

1. Khan MM, Saeed SR. (2012). Provision of undergraduate otorhinolaryngology teaching within General Medical Council approved UK medical schools: what is current practice? *J Laryngol Otol.* 126, 340-344.

2. Mace AD, Narula AA. (2004). Survey of current undergraduate otolaryngology training in the United Kingdom. *J Laryngol Otol*. 118, 217-220.

3. Lightbody KA, Wilkie MD. (2012). Current ENT training within the UK. *Clin Otolaryngol*. 37, 84-85.

4. Ishman SL, Stewart CM, Senser E et al. (2015). Qualitative synthesis and systematic review of otolaryngology in undergraduate medical education. *Laryngoscope*. 125, 2695–2708.

5. Glicksman JT, Brandt MG, Parr J et al. (2008). Needs assessment of undergraduate education in otolaryngology among family medicine residents. *J Otolaryngol Head Neck Surg*. 37, 668-675.

6. Department of Health. (2013). Delivering high quality, effective, compassionate care: Developing the right people with the right skills and the right values. A mandate from the Government to Health Education England: April 2013 to March 2015.

7. Neil JF. (1979). Otolaryngology in the curriculum. *J R Soc Med.* 72, 551-552.

8. Lennon P, O'Donovan JP, O'Donoghue S et al. (2013). The otolaryngology, head and neck training appraisal questionnaire: a national general practice perspective. *Ir J Med Sci*. 182, 609-614.

9. Griffiths E. (1979). Incidence of ENT problems in general practice. *J R Soc Med.* 72, 740.

10. Clamp PJ, Gunasekaran S, Pothier DD et al. (2007). ENT in general practice: training, experience and referral rates. *J Laryngol Otol*. 121, 580-583.

11. Lund VJ. (1990). Otolaryngology in the curriculum--10 years on: discussion paper. *J R Soc Med.* 83, 377-379.

12. General Medical Council. (2010). Standards for curricula and assessment systems.

13. Leibbrandt L, Brown D, White J. (2005). National comparative curriculum evaluation of baccalaureate nursing degrees: a framework for the practice based professions. *Nurse Educ Today.* 25, 418-429.

14. Kern DE, Thomas PA, Hughes MT. (2009). Curriculum Development for Medical Education: A Six-Step Approach. Baltimore, Johns Hopkins University Press.

15. General Medical Council (2009). Tomorrow's Doctors.

16. Fung, K. (2015). Otolaryngology-head and neck surgery in undergraduate medical education: Advances and innovations. *Laryngoscope*. 125, Suppl 2: S1-14.

17. Lloyd S, Tan ZE, Taube MA et al. (2014). Development of an ENT undergraduate curriculum using a Delphi survey. *Clin Otolaryngol.* 39, 281-288.

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18. Kentala E, Mattila PA, Nieminen J. (2005). Follow-up evaluation of Finnish undergraduate education in otorhinolaryngology. *Med Educ.* 39, 1076.

19. Carr MM, Brown DH, Reznick RK. (1999). Needs assessment for an undergraduate otolaryngology curriculum. *Otolaryngol Head Neck Surg*. 120, 865-868.

20. Fisher EW, Pfleiderer AG. (1992). Is undergraduate otoscopy teaching adequate?--An audit of clinical teaching. *J R Soc Med*. 85, 23-25.

21. Royal College of Obstetrics and Gynaecologists. (2009). National Undergraduate Curriculum in Obstetrics and Gynaecology Report of a Working Party.

22. Powell J, Cooles FA, Carrie S et al. (2011). Is undergraduate medical education working for ENT surgery? A survey of UK medical school graduates. *J Laryngol Otol*. 125, 896-905.

23. Lee MS, Montague ML, Hussain SS. (2005). Student-perceived benefit from otolaryngology theatre attendance. *J Laryngol Otol.* 119, 293-298.

24. Coleman G, Byrd-Bredbenner C, Baker S et al. (2011). Best practices for extension curricula review. Available at: http://www.joe.org/joe/2011april/tt2011.php.

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Figures

Figure 1- located between paragraphs 5 and 6 of results section.

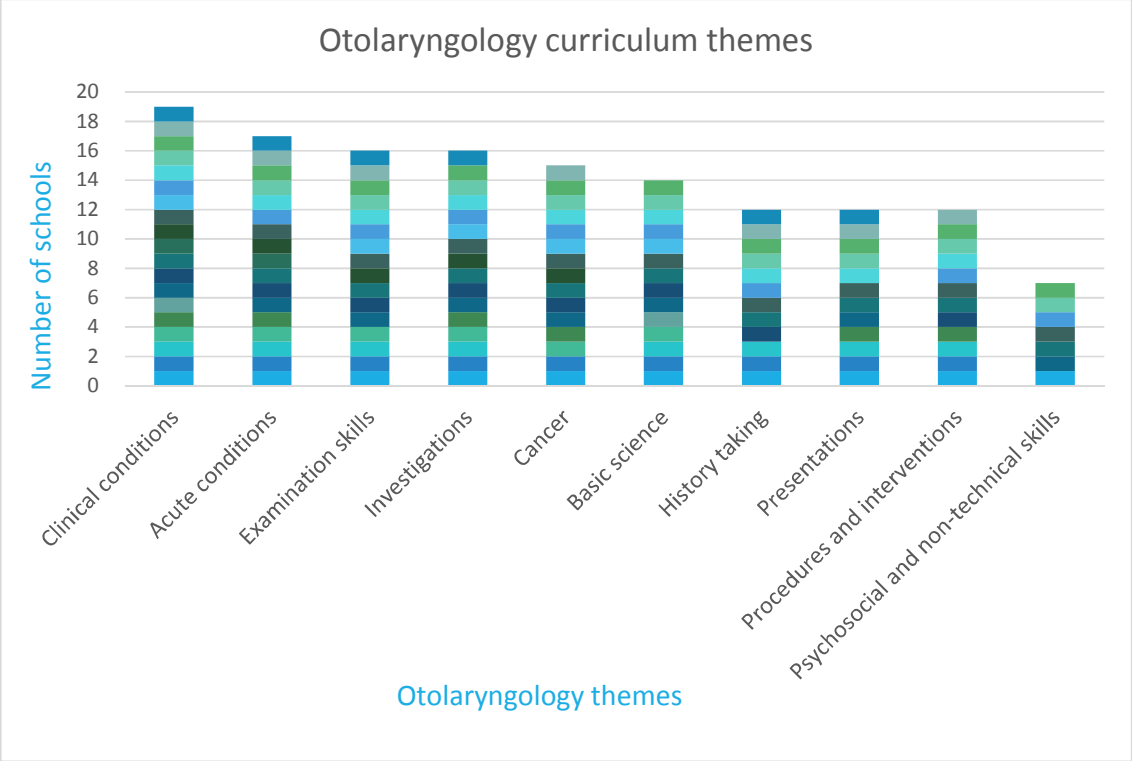

Figure 1: Curriculum themes as identified by thematic analysis. Each colour is representative of an individual medical school.

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Tables

Table 1- located between paragraph 1 and 2 of 'Methodology' section

Item	Areas examined
1. Curriculum details and structure	Year of publication / updated Organisers and contact details Duration of course Information on course structure Links with other areas
2. Content and methods	Teaching hours Aims and objectives Content Methods
3. Assessment and feedback	Type of assessment/feedback
4. Alignment with General Medical Council	Tomorrow's Doctors framework
5. Other	Anything of interest / exceptional

Table 1: Specialty specific Curriculum Evaluation Framework (CEF)

Table 2- located between paragraphs 5 and 6 of 'Results' section

Acute condition	Number of medical schools	Percentage (%)
Epistaxis	15	79%
Upper airway obstruction	12	63%
Acute vertigo	12	63%
Tonsillitis	11	58%
Nasal trauma	10	53%
Quinsy	7	37%
Foreign body	6	32%
Pinna haematoma	4	21%
Orbital cellulitis	1	5%

Table 2: Acute condition theme showing individual topics

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Table 3- located between paragraphs 6 and 7 of 'Results' section

Rhinology	Number of medical schools	Percentage (%)
Chronic rhinosinusitis	16	84%
Acute rhinosinusitis	14	74%
Facial pain	11	58%
Allergic rhinitis	10	53%
Non-allergic rhinitis	10	53%
Septal deviation	7	37%

Table 3: Rhinology theme showing individual topic

Table 4- located between paragraphs 7 and 8 of 'Results' section

Examination skills	Number of medical schools	Percentage (%)
Otoscopy	14	74%
Nasal cavity	12	63%
Neck	12	63%
Throat	11	58%
Tuning fork tests	11	58%
Oral cavity	10	53%
Larynx	4	21%
Salivary glands	4	21%
Dix-Hallpike test	4	21%
Test of hearing	4	21%
Romberg's test	2	11%
Unterberger's test	1	5%

Table 4: Examination skill theme showing individual topics

Table S5- located between paragraphs 8 and 9 of 'Results' section

Psychosocial/ non-technical aspects	Number of medical schools	Percentage (%)
Communication with the hearing impaired	7	37%
MDT approach to deafness	6	32%
MDT in voice management	6	32%
Educational implications of hearing loss	4	21%
Importance of voice in communication	4	21%
Social implications of hearing loss	3	16%
Communication with	3	16%

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laryngectomees		
Behavioural / psychological factors affecting disease	3	16%
Social implication of vertigo	2	11%

Table S5: Psychosocial/ non-technical elements showing individual topics

Table S6- located between paragraphs 9 and 10 of 'Results' section

Teaching method	**Number of medical schools**	**Percentage (%)**
Outpatient clinics	9	47%
Theatre	9	47%
Lectures	6	32%
Seminars/tutorials	6	32%
Case based discussion	5	26%
Multi-disciplinary settings	4	21%
E-learning material	3	16%
Anatomy	2	11%
Ward teaching/shadowing	2	11%
Clinical skills 'lab' teaching	2	11%
Self-study allocated time	2	11%
None specified	6	32%

Table S6: Teaching methods employed by medical schools for ENT teaching

Table 7- located at the end of the 'Results' section

Assessment type	**Number of medical schools**	**Percentage (%)**
Checklist/logbook	6	32%
ENT teaching block MCQ/EMQ assessment	4	21%
End of year assessment	3	16%
Case assignment/report	3	16%
Tutor sign off	3	16%
Self-assessment	1	5%
Reflection	1	5%
None specified	10	53%

Table 7: Type of assessment utilised during ENT teaching

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